UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/555,076	03/02/2006	Toshiyuki Takagi	DAISAN126512	3081

26389 7590 10/29/2010

CHRISTENSEN, O'CONNOR, JOHNSON, KINDNESS, PLLC
1420 FIFTH AVENUE
SUITE 2800
SEATTLE, WA 98101-2347

EXAMINER
BETTON, TIMOTHY E

ART UNIT	PAPER NUMBER
1627	

NOTIFICATION DATE	DELIVERY MODE
10/29/2010	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

efiling@cojk.com

Office Action Summary	Application No.	Applicant(s)	
	10/555,076	TAKAGI ET AL.	
	Examiner	Art Unit	
	TIMOTHY E. BETTON	1627	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *11 May 2010*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *41,43-48,55-57 and 59-62* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *41, 43-48, 55-57 and 59-62* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Applicants' Remarks filed on 28 July 2009 have been acknowledged and duly made of record.

Response to Arguments

The essence of applicants' invention according to the instant claim set is drawn to a method for treating hypoadiponectinemia in a warm-blooded animal comprising administering one or more water soluble HMG CoA Reductase inhibitor(s).

Applicants' argue the 35 U.S.C. 103(a) rejection over claims 41, 43-48, 55-57, and 59-62 as being unpatentable over Arita et al. (IDS 02) Paradoxical Decrease of an Adipose-Specific Protein Adiponectin, in Obesity, Biochemical and Biophysical Research Communications, 1999, 257, 79, Kondo et al. (IDS 011) Association of Adiponectin Mutation With Type 2 Diabetes, Diabetes, vol. 51, July 2002 (page 2325, col. 1, lines 23-29)and (col. 2, second full paragraph)) and Ellsworth et al. (USPN 6,414,126 B1) in view of Weyer et al. (IDS 028), The Journal of Clinical Endocrinology & Metabolism, 2001, 86, 1930-1935, Orsi et al. (Simvastatin-Associated Memory Loss) Pharmacotherapy 21(6): 767-769, 2001, printed pages 1-3, especially page 2, paragraphs 1-3).

Applicants' claim that Arita not only fails to mention any methods of increasing adiponectin production or treatment of hypoadiponectinemia in a warm-blooded animal, this reference also fails to discuss using HMG-CoA reductase inhibitors (water-soluble or otherwise) in such methods.

Applicants' arguments with regard to Arita are considered and are found persuasive. The argument drawn to Arita is hereby withdrawn.

Applicants' claim that Kondo fails to discuss HMG-CoA reductase inhibitors (water-soluble or otherwise) to increase adiponectin production or treathypoadiponectinemia in a warm-blooded animal. Action, p 5. Indeed, this reference fails to discuss HMG-CoA reductase inhibitors in any context.

Applicants' arguments with regard to Kondo are considered but are not found persuasive because Kondo was employed in the previous action to teach that lipid abnormalities such as hypoadiponectinemia can be treated with hypolipidemic agents which broadly include statins such as pravastatin and rosuvastatin. It was disclosed that Kondo does not expressly teach pravastatin and rosuvastatin as the hypolipidemic agents.

Applicants' claim that Ellsworth does discuss HMG-CoA reductase inhibitors, [however] they are only mentioned as possible agents to use in combination with C-aryl glycosidic SGLT2 inhibitors. In contrast to the rejected claims, then, they are not mentioned as agents: for monotherapy. Moreover, they are not mentioned as agents for increasing adiponectin production or for hypoadiponectinemia treatment. Indeed, adiponectin and hypoadiponectinemia are not mentioned by Ellsworth at all.

Applicants' arguments with regard to Ellsworth are considered but are not found persuasive, because Ellsworth explicitly teach in column 7 at lines 31-44 [that] a method is provided for treating or delaying the progression or onset of **diabetes**, **especially type I and type II diabetes**, [...], **neuropathy**, [...], **insulin resistance** [..], **obesity**, [...], **atherosclerosis and hypertension**, [...]. Further, in column 73 at lines 28 and 30, pravastatin and rosuvastatin are taught. In view of Ellsworth, the limitations in claim 41 contain comprising language and also

contain the limitation drawn to either one or two HMG-CoA reductase inhibitors are overcome with obviousness.

Applicants' claim that Weyer does not discuss modulation, much less increasing, adiponectin production using HMG-CoA reductase inhibitors. Treatment of hypoadiponectinemia using water-soluble HMG-CoA reductase inhibitors is also not mentioned. These are at least two differences between the rejected claims and the teachings of Weyer.

Applicants' arguments with regard to Weyer are considered but are not found persuasive because Weyer was employed to adequately demonstrate that disease states such as obesity and diabetes which are circulatory diseases resulting in decreased adiponectin levels as acknowledged by applicants' are the same disease states *inter alia* that may be treated with the pravastatin and rosuvastatin of Ellsworth.

Applicants' claim that while Orsi discusses HMG-CoA reductase inhibitors and their relative water solubilities, this reference does not discuss adiponectin or production thereof; nor is hypoadiponectinemia or the treatment thereof discussed.

Applicants' arguments with regard to Orsi are considered but are not found persuasive because Orsi was employed in the previous rejection of record to show why the pravastatin and rosuvastatin of Ellsworth would be readily chosen by the one of pertinent skill in the art due to lower toxicity profile drawn to such water-soluble statins. Thus, this being case, it would reasonably follow that Ellsworth circulatory diseases' such as diabetes, arteriosclerosis, atherosclerosis, hypertension, obesity, etc. which are well-established in the art to decrease

adiponectin levels would be more suitably treated with pravastatin and rosuvastatin as they are water-soluble as opposed to lipid soluble statins.

Further, in addressing applicants' arguments directed to the differences between the rejected claims and the cited art as not being obvious differences, the limitations of instant claim 41 are hereby reiterated:

The essence of applicants' invention according to the instant claim set is drawn to a method for treating hypoadiponectinemia in a warm-blooded animal *comprising administering* one or more water soluble HMG CoA Reductase inhibitor(s). The *comprising administering* language reasonably suggests that the minimal limitation of the claims is met in addition to what would reasonably be considered comprising in a typical pharmaceutical formulation or combination.

Further, by virtue of pravastatin and rosuvastatin being administered in therapeutic doses, hypoadiponectinemia would thereby be treated as one of the primary risk factors in any of the diseases as disclosed by Kondo generally and Ellsworth more directly as explained above.

Accordingly, in response to applicant's argument above, the test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981).

In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on

combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.,* 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988)and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992).

Additionally, with regard to the actions reasoning being conclusory for example, as indicated by Ellsworth and Orsi as well as the present specification HMG CoA reductase inhibitors may be used to treat hyperlipidemia. That the art teaches that hyperlipidemia may be associated with certain other physiological states, including low adiponectin levels as described by Arita, Kondo, and Weyer, does not permit a conclusion that a hyperlipidemia agent such as an HMG CoA reductase inhibitor will necessarily increase adiponectin production or, in the case of water-soluble HMG CoA reductase inhibitors, treat hypoadiponectinemia.

In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

For the reasons of record, the previous rejection with the exception of Arita is maintained.

Rejections not reiterated from previous Office Actions are hereby withdrawn. The following rejections are either reiterated or newly applied. They constitute the complete set presently being applied to the instant application.

Status of the Claims

Claim 41, 43-48, 55-57, 59-62 are pending further prosecution on the merits.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 41, 43-48, 55-57, and 59-62 are rejected under 35 U.S.C. 103(a) as being unpatentable **Kondo et al.** (IDS 011) Association of Adiponectin Mutation With Type 2 Diabetes, Diabetes, vol. 51, July 2002 (page 2325, col. 1, lines 23-29)and (col. 2, second full paragraph)) and **Ellsworth et al.** (USPN 6,414,126 B1) in view of **Weyer et al.** (IDS 028) , The Journal of Clinical Endocrinology & Metabolism, 2001, 86, 1930-1935, **Orsi et al.** (Simvastatin-Associated Memory Loss) Pharmacotherapy 21(6): 767-769, 2001, printed pages 1-3, especially page 2, paragraphs 1-3).

Kondo et al. teach patients who carry the 1164T mutation showed some feature of metabolic syndrome including hypertension, **hyperlipidemia**, diabetes, and arteriosclerosis. [The] findings suggest that 1164T mutation is associated with low plasma adiponectin concentration and type 2 diabetes (page 2325, col. 1, lines 23-29).

Kondo et al. teach patients with low plasma adiponectin levels (7 of the 9 patients carrying the 1164T mutation) **had lipid abnormalities and were on hypolipidemic agents**. Six of the nine patients suffered from atherosclerotic vascular diseases. Further, these results suggest

that the 1164T mutation of adiponectin gene in subjects with hypoadiponectinemia is strongly associated with the metabolic syndrome (col. 2, second full paragraph).

Kondo et al. does not expressly suggest that the administration of one or more HMG-CoA reductase inhibitors to increase adiponectin or treat hypoadiponectinemia.

Ellsworth et al teach a method for treating diabetes, especially type II diabetes, as well as hyperglycemia, hyperinsulinemia, obesity, hypertriglyceridemia, Syndrome X, diabetic complications, atherosclerosis and related diseases, employing such C-aryl glucosides alone or in **combination with one, two or more other type antidiabetic agent and/or one, two or more other type therapeutic agents such as hypolipidemic agents** (column 1, lines 10-20).

Ellsworth et al teach that a method is provided for treating or delaying the progression or onset of diabetes, especially type I and type II diabetes, including complications of diabetes, including retinopathy, neuropathy, nephropathy and delayed wound healing, and related diseases such as insulin resistance (impaired glucose homeostasis), hyperglycemia, hyperinsulinemia, **elevated blood levels of fatty acids or glycerol, obesity, hyperlipidemia including hypertriglyceridemia, Syndrome X, atherosclerosis and hypertension**, and for increasing high density lipoprotein levels, wherein a therapeutically effective amount of a compound of structure I is administered to a human patient in need of treatment(col. 7, ls. 31-44).

Ellsworth et al. teach a combination wherein the lipid lowering agent is pravastatin rosuvastatin (col. 73, line 28 and 30).

This disclosure of Ellsworth et al. is reasonably obvious over the limitation in current independent claim 41 and all dependent claims therefrom because of the instant claim's disclosure of the limitation drawn to 'comprising'.

Weyer et al. teach (page 1930, 2nd column, last two lines and page 1931, 1st nine lines) obesity as commonly associated with an array of other related metabolic disorders such as atherosclerosis and diabetes (page 1930, 1st column bridging to first 3 lines of second column; please see page 1932 under Discussion, 2nd column).

Ellsworth et al. does not expressly teach reasoning as to why water-soluble statins are preferable.

However, Orsi et al. resolves the deficiency of Ellsworth et al. in view of the limitations of the claimed invention by teaching reasoning as to why statins such as pravastatin (and reasonably, rosuvastatin) would be preferred in the stead of a lipid-soluble HMG agent such as simvastatin.

Water Soluble HMG CoA reductase inhibitors

Applicants' cite the following reason for limiting the invention to water-soluble HMG CoA-reductase inhibitors. **For an HMG-CoA reductase inhibitor serving as an active ingredient compound of the present invention, a water-soluble HMG-CoA reductase inhibitor such as pravastatin and rosuvastatin is preferable. In the present invention, a water-soluble HMG-CoA reductase inhibitor is an HMG-CoA reductase inhibitor in which the logarithm of the partition coefficient measured between phosphate buffer solution (pH 7.0 to 8.0, preferably pH 7.0 to 7.5, and more preferably pH 7.0) and l-octanol [log(test substance concentration in l-octanol phase/test substance concentration in buffer solution phase)] is 1.0 or less (preferably 0.5 or less, and more preferably 0.0 or less)** (McTaggart, F. et al., The American Journal of Cardiology, 2001, 87, 28B-32B; Chapman, M. J. et al., Atherosclerosis Supplements, 2002, 33-37; Shimada, Y. et al., Progress in Medicine, 1998, 18, 957-962). The aforementioned partition coefficient can be measured according to ordinary methods 25 (Partition Coefficient (n-octanol/water), OECD Guidelines for Testing of Chemicals, Section i, Physical Chemical Properties, Paris, 1981, 107; Shimada, Y. et al., Progress in Medicine, 1998, 18, 957-962) or

similar methods thereto. **In addition, for an HMG-CoA reductase inhibitor serving as an active ingredient compound of the present invention, pravastatin or derivative thereof, or rosuvastatin or derivative thereof, is preferable. In the present invention**, a derivative of pravastatin is a compound having HMG-CoA reductase inhibitory action, a pharmacologically acceptable salt thereof or ester thereof as described in Japanese Patent Application (Kokai) No. Sho 57-2240 (US Patent No. 4346227), while a derivative of rosuvastatin is a compound having HMG-CoA reductase inhibitory action, a pharmacologically acceptable salt thereof or ester thereof as described in Japanese Patent Application (Kokai) No. Hei 5-178841 (US Patent No. 5260440) (specification, pages 15 and 16).

Based on the disclosure above, Orsi et al. teach: The HMG-CoA reductase inhibitors, also known as the statins, reduce the risk of primary and secondary coronary heart disease and total mortality as shown in large-scale, randomized, controlled clinical trials.[3,4] Overall, these drugs reduce the risk of major coronary events by 26-36% and reduce the risk of death from any cause by 14-28%.[3] Statins also reduce the risk of angina pectoris and cerebrovascular accidents, and decrease the need for coronary artery bypass grafting and angioplasty.[4-7] The six statins available in the United States (atorvastatin, cerivastatin, fluvastatin, lovastatin, pravastatin, simvastatin) all act primarily by competitively inhibiting HMG-CoA reductase, which is the last regulatory step in the synthesis of cholesterol.[5-7]

Simvastatin (on formulary at our institution) and pravastatin (non-formulary), along with the other drugs in this class, are well tolerated in the general population. Although the agents are mevinic acid-derivatives and have similar mechanisms of action and the same pharmacologic effect, they have important differences in their chemical structures, which affect their relative lipophilicity. Simvastatin has a methyl substituent attached to the hexahydro-naphthalene nucleus, which increases its lipophilicity, whereas pravastatin has a hydroxyl substituent, which increases its hydrophilicity.[8] In addition, simvastatin's closed lactone ring enhances its lipophilicity compared with pravastatin, which is the only statin administered in the hydroxy acid form. **A more lipid-soluble closed lactone HMG-CoA reductase inhibitor, such as simvastatin, may have a greater propensity for crossing the blood-brain barrier and affecting CNS activity, even though only very low levels have been found in human cerebral spinal fluid.[8] Pravastatin is the most hydrophilic polar statin, followed in decreasing hydro-philicity by cerivastatin and fluvastatin, atorvastatin, lovastatin, and simvastatin. Cerivastatin and fluvastatin are considered water soluble. Atorvastatin is only slightly water soluble. Lovastatin is more lipophilic, and simvastatin, which is 194 times more lipophilic than pravastatin, is by far the most lipophilic of the statins.[8]**

Pharmacokinetic variability also contributes to the differences among the statins. **After oral administration, only about 5% and 17% of the doses of simvastatin and pravastatin, respectively, reach the general circulation as active drug.[6,7]** This low bioavailability is due to incomplete absorption and extensive first-pass hepatic metabolism. Both drugs undergo extensive hepatic metabolism. Simvastatin is an inactive prodrug that requires hepatic activation through hydrolysis to ß-hydroxyacid, an active inhibitor of HMG-CoA reductase. Other hepatic metabolites are 6-hydroxy, 6-hydroxymethyl, and 6-exomethylene (as well as other derivatives). **Pravastatin is inherently active and undergoes extensive first-pass hepatic metabolism to its**

primary metabolites -- the 3-α-hydroxy isomer and the 3-α-, 5-ß-, and 6-ß-trihydroxy metabolite. Unlike simvastatin's metabolites, pravastatin's metabolites are not active in the inhibition of HMG-CoA reductase.[6,7]

Simvastatin is highly protein bound (95%) compared with pravastatin (43-55%). Both simvastatin and pravastatin potently inhibit cholesterol synthesis in liver cells. Pravastatin is unique in that it is the only statin that undergoes selective uptake into hepatocytes. Due to its low lipid solubility, a carrier-mediated transport process specific to hepatocytes is necessary for cellular uptake.[8] Simvastatin has passed the blood-brain barrier in in vitro studies, whereas pravastatin does not distribute into cerebrospinal fluid. Both drugs undergo significant biliary excretion, with 60% of simvastatin and 71% of pravastatin appearing in the feces after oral administration. Thirteen percent of simvastatin and 20% of pravastatin are excreted renally. Neither compound is significantly affected by renal dysfunction, and dosage reductions are not necessary in patients with mild to moderate renal insufficiency.[6,7]

Thus, the above reference clearly teaches why pravastatin would be more preferable (which is reasonably extended to rosuvastatin which is also art-known as being water-soluble).

Specifically, pravastatin is preferred because of fewer propensities for toxicological side effects and adverse events due to stored drug in the fat cells. The fact that pravastatin **is the most hydrophilic polar statin, followed in decreasing hydro-philicity by cerivastatin and fluvastatin, atorvastatin, lovastatin, and simvastatin. Cerivastatin and fluvastatin are considered water soluble. Atorvastatin is only slightly water soluble. Lovastatin is more lipophilic, and simvastatin, which is 194 times more lipophilic than pravastatin, is by far the most lipophilic of the statins.**

Thus, it would be reasonably obvious to extend the teachings of pravastatin to rosuvastatin which is also indicated in the art as water-soluble.

At any given time during the administration of one or more HMG CoA-reductase inhibitors to the subject of claim 1, the increase of adiponectin will occur. The limitation in the

claim cites *comprising administering to a warm-blooded animal in need of such treatment an effective amount of one or more* [...]. The patient in need of such treatment according to this claim 1 is a patient in need of an increase in adiponectin which could reasonably be extended to a patient who is not necessarily obese but is need of such therapy. Secondly, it has been disclosed above that a subject who has a decrease in adiponectin may also present with any of the closely related disorders, i.e., the plethora of metabolic disorders of which dyslipidemia is a part. It would then follow, that antilipidemic agents would be administered in the course of regulating dyslipidemia primarily while therapeutically treating hypoadiponectinemia in the whole administrative process.

Further, it would be obvious to try various hypolipidemic agents in combination and in tandem in order to regulate those metabolic disorders such as dyslipidemia while in effect also treating adiponectin production and regulating based on genetic factors as discussed above.

Thus, it would be *prima facie* obvious to the one of skill at the time of the invention to recognize a reasonable expectation of success via the combining and incorporating together the references *supra*.

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

In determining the scope and contents of the prior art, the teachings and methods of Kondo et al. provide adequate reasoning as to why one of skill would administer one or more

HMG-CoA reductase inhibitors for the disease states as described in both references, while also increasing adiponectin production in the process. Weyer et al. further provides motivation by further showing the interrelatedness of metabolic disease states and their cause of hypoadiponectinemia or decreased adiponectin production. Ellsworth et al. teaches both pravastatin and rosuvastatin in embodiments directed specifically to combination therapy. Ellsworth et al. further teach the disease states by which these agents are indicated to treat and/or palliate which fully encompasses the disease states as disclosed in the current invention. As a result, if one or more HMG-CoA reductase inhibitors are administered, preferably water-soluble HMG-CoA reductase inhibitors, then the teachings of Orsi et al. with regard to the background behind the preference for such water-soluble classes of such agents is further made obvious due to decreased toxicological adverse effects which are readily observed with lipid-soluble agents of the same general class. The differences between the prior art and the claims at issue are that the claims at issue disclose an invention that teaches the administration of composition specifically comprising pravastatin and rosuvastatin as elected. Orsi et al. resolves the difference by teaching why it would be obvious for the one of skill in the normal administration of water-soluble HMG-CoA reductase inhibitors to prefer this class of antilipidemics over the lipid-soluble counterparts, derivatives, and/or co-classes.

The objective evidence present in the application is fully made obvious by the teachings of Kondo et al. and Ellsworth et al. principally. The one of skill would readily recognize that with the administration of one or more water-soluble HMG-CoA reductase inhibitors for metabolic diseases and disorders for which they are readily indicated, that in the process of treatment adiponectin would be affected. Weyer fully establish that the target population which

suffers from an array of these metabolic disorders shares a link to the decrease in adiponectin or hypoadiponectinemia as genetically distinguished in Kondo et al.

The MPEP states:

The Supreme Court in KSR reaffirmed the familiar framework for determining obviousness as set forth in Graham v. John Deere Co. (383 U.S. 1, 148 USPQ 459 (1966)), but stated that the Federal Circuit had erred by applying the teaching-suggestion-motivation (TSM) test in an overly rigid and formalistic way. KSR, 550 U.S. at ___, 82 USPQ2d at 1391. Specifically, the Supreme Court stated that the Federal Circuit had erred in four ways: (1) "by holding that courts and patent examiners should look only to the problem the patentee was trying to solve " (Id. at ___, 82 USPQ2d at 1397); (2) by assuming "that a person of ordinary skill attempting to solve a problem will be led only to those elements of prior art designed to solve the same problem" (Id.); (3) by concluding "that a patent claim cannot be proved obvious merely by showing that the combination of elements was obvious to try'" (Id.); and (4) by overemphasizing "the risk of courts and patent examiners falling prey to hindsight bias" and as a result applying "[r]igid preventative rules that deny fact-finders recourse to common sense" (Id.).

In KSR, the Supreme Court particularly emphasized "the need for caution in granting a patent based on the combination of elements found in the prior art,"Id. at ___, 82 USPQ2d at 1395, and discussed circumstances in which a patent might be determined to be obvious. Importantly, the Supreme Court reaffirmed principles based on its precedent that "[t]he combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results."Id. at ___, 82 USPQ2d at 1395. The Supreme Court stated that there are "[t]hree cases decided after Graham [that] illustrate this doctrine." Id. at ___, 82 USPQ2d at 1395. (1) "In United States v. Adams, . . . [t]he Court recognized that when a patent claims a structure already known in the prior art that is altered by the mere substitution of one element for another known in

the field, the combination must do more than yield a predictable result." Id. at ___, 82 USPQ2d at 1395. (2) "In Anderson 's-Black Rock, Inc. v. Pavement Salvage Co., . . . [t]he two [pre-existing elements] in combination did no more than they would in separate, sequential operation."Id. at ___, 82 USPQ2d at 1395. (3) "[I]n Sakraida v. ***AG Pro, Inc., the Court derived . . . the conclusion that when a patent simply arranges old elements with each performing the same function it had been known to perform and yields no more than one would expect from such an arrangement, the combination is obvious."*** *Id. at ___, 82 USPQ2d at 1395-96 (Internal quotations omitted.). The principles underlining these cases are instructive when the question is whether a patent application claiming the combination of elements of prior art would have been obvious. The Supreme Court further stated that:*

When a work is available in one field of endeavor, design incentives and other market forces can prompt variations of it, either in the same field or a different one. If a person of ordinary skill can implement a predictable variation, § 103 likely bars its patentability. For the same reason, if a technique has been used to improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond his or her skill. Id. at ___, 82 USPQ2d at 1396.

"When considering obviousness of a combination of known elements, the operative question is thus "whether the improvement is more than the predictable use of prior art elements according to their established functions." *Id . at ___, 82 USPQ2d at 1396.*

Further, [i]n consideration of applicants' disclosure that full consideration was not rendered in view of applicants alleged claim of unexpected results (see page 7 in the first paragraph), applicants attention is directed to the current specification of record filed on 28 October 2005. Examples begin on page 24 and conclude on page 31. Within these designated

pages, this Examiner is specifically asking for clarity in where it specifically and adequately explains unexpected results drawn to anything distinct set aside from what the normal administration of these active agents would affect. The fact that a property or pathophysiological change had occurred initially unobserved cannot be considered unexpected results as these said changes albeit unrecognized were not initially known, observed or made the focus of experimental consideration. Further, the references as applied are found adequate in as far as Kondo, EIIsworth, Weyer, and Orsi consider the end-user, the human subject. The Examples as disclosed in pages 24-31 are merely animal studies which while being a suitable indirect indicator as to how drugs effect the human beings, is not deemed to be the focus of endeavor in this invention. In the alternate, if unexpected results are drawn to the effects in laboratory mice, applicants should clearly indicate so. Applicants further assert on page 7 in the 3rd paragraph that the test subjects of Kondo et al. teach incongruities in view of determining adiponectin levels based upon administration with HMG-CoA reductase inhibitors. In consideration of this Examiner's comments reiterated by applicants at the bottom of page 6 in view of the paragraph bridging pages 7 and 8 of the same set of remarks, the reference is still proper for what it shows in as far as the well-established and art-known agents of the claimed invention are currently marketed and administered for an array of disorders which treat hyperlipidemia inter alia metabolic disorders. As for Ellsworth et al., the relevance lies in the administration of HMG-CoA reductase inhibitors and the effects associated with such administration. Weyer et al. is proper for showing the keen relationship between inter alia obesity and hyperlipidemia in as far as antihyperlipidemics are currently administered adjunctively in therapy regimens for patients

with inter alia obesity issues. Finally, Orsi et al. teach a fundamental aspect in the way safer administration of the active agents of applicants invention.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Timothy E. Betton whose telephone number is (571) 2729922. The examiner can normally be reached on Monday-Friday 8:30a - 5:00p. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sreeni Padmanabhan can be reached on (571) 272-0629. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

TEB

/SREENI PADMANABHAN/

Supervisory Patent Examiner, Art Unit 1627